

# **FREMONT ENVIRONMENTAL INC.**

March 1, 2023

Mr. James Hix  
Colorado Oil and Gas Conservation Commission (OWP)  
1120 Lincoln Street, Suite 801  
Denver, CO 80203

Subject:           **Facility Closure Data Submittal**  
                  Nordman Trust (OWP) #32-20 (Flowline and wellhead)  
                  API # 05-039-06502  
                  SWNE Sec. 20 T6S R64W Meridian 6  
                  Elbert County, Colorado  
                  Facility #209597, Remediation #24406

Dear Mr. Hix:

As you requested, Fremont Environmental Inc. (Fremont) personnel conducted wellhead and flowline closure sampling activities for the Petroshare Nordman Trust #32-20. The sampling completed at the wellhead cut and cap excavation was completed on October 26<sup>th</sup>, 2022. The flowline removal activities were completed on November 3<sup>rd</sup> and 4<sup>th</sup>, 2022.

Contamination was observed on site as discussed below:

Field observations and laboratory analysis indicated soil contamination adjacent to the wellhead during the cut and cap excavation. Soil screened on each wall of the excavation indicated staining and elevated PID concentrations. Petroleum contamination was identified in sample WHF-8 in the floor adjacent to the wellhead; this contamination extended deeper than 8 feet below ground surface (BGS) and was observed to contain significant concentrations of several organic constituents, illustrated on Table 1.

Sample WHN-4 was screened with a photoionization detector and had the highest PID reading at 849 ppm. This sample was submitted for laboratory analysis and naphthalene was also observed in excess of the Table 915-1 protection of groundwater (POG) soil screening limits (SSL). Further the sample was observed to contain levels of 1- and 2-methylnphthalene in excess of Table 915-1 for their respective standards, as shown on Table 2.

Sample FLN1-4.5 was collected from the flowline adjacent to the wellhead also indicated significant contamination. Elevated concentrations did not appear to originate from the flowline as the line was observed in fair condition with no obvious signs of failure.

Inorganic contamination including arsenic, selenium and pH were observed in excess of Table 915-1 SSLs in the background sample, BKG-0.5. Therefore, those elevated concentrations can be attributed to native concentrations and disregarded. However, barium was elevated in the north wall of the wellhead excavation as depicted on Table 4.

Soil impacts were left in place as discussed on the attached Closure Check lists. Please contact us at (303) 956-8714 if you require any additional information. Fremont appreciates the opportunity to provide this service.

**1759 REDWING LANE, BROOMFIELD, CO 80020**  
**(720)-252-7191 (DIRECT)**

Sincerely,

**FREMONT ENVIRONMENTAL INC.**

A handwritten signature in black ink, appearing to read "Nick Larimer".

Nick Larimer  
Project Manager

Attachments:

- Facility Closure Checklist
- Tables
- Figures
- Photos
- Laboratory Reports

# Flowline Closure Checklist

## COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional Attachments:		Tank Battery Closure	<input checked="" type="checkbox"/>	Wellhead Closure		Pit Closure		Partially Buried Vault Closure
Site Name & COGCC Facility Number: Nordman Trust #32-20, 209597		Date: November 3&4, 2022		Remediation Project #: 24406				
Associated Wells: 05-039-06502		Age of Site: Spud Date- 1/15/1985		Number of Photos Attached: 4				
Starting point: (GPS coordinates and descriptions) Well head- Lat/Long: (39.515431/-104.576882)								
End point: (GPS coordinates and descriptions) Former separator - (39.5142, -104.57506)								
USCS Soil Type: SC				Estimated Depth to Groundwater: Not Encountered. Estimated- 200' bgs				
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) Hydrocarbons observed adjacent to the wellhead								
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None observed								
Flowlines								
Flowline type	crude							
Depth	4' bgs							
Age	spud 1985							
Length	600'							
Construction Material	Steel							
Were flowlines pulled?	Partially							
Visual Integrity of lines	fair							
Visual impacts if trenched	none observed							
PID Readings if trenched	0							
Sample taken? Location/Sample ID#	y/ y211148-01 & y211152-01							
Photo Number(s)	FL1-4							
Other observations regarding on location flowlines: Contamination observed adjacent to the wellhead. The flow line was abandoned in place beneath the drainage between the former tank battery and the wellhead locations.								
Summary								
Was impacted soil identified? No                      Yes - less than 10 cubic yards <input checked="" type="checkbox"/> Yes - more than 10 cubic yards								
Total number of samples field screened: 11				Total number of samples collected: 2				
Highest PID Reading: FLN1-4.5 - PID- 533.8 ppm				Total number of samples submitted to lab for analysis: 2				
If more than 10 cubic yards of impacted soil were observed:								
Vertical extent: extends beyond 8' bgs				Estimated spill volume: unknown, historical				
Lateral extent: extends in all walls of the wellhead excavation				Volume of soil removed: Left in place				
Is additional investigation required? Yes, additional investigation required. Contamination also identified at the Nordman Trust tank battery during SSI completed February 9, 2023.								
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No                      Yes - not impacted or in contact with impacted soils                      Yes - groundwater impacted and/or in contact with impacted soils								
Measured depth to groundwater: NA				Was remedial groundwater removal conducted? Yes <input checked="" type="checkbox"/> No				
Date Groundwater was encountered: NA				Commencement date of removal: NA				
Sheen on groundwater? Yes <input checked="" type="checkbox"/> No				Volume of groundwater removed prior to sampling: NA				
Free product observed? Yes <input checked="" type="checkbox"/> No				Volume of groundwater removed post sampling: NA				
Total number of samples collected: NA				Total Volume of groundwater removed: NA				
Total number of samples submitted to lab for analysis: NA								

## Wellhead Closure Checklist

### COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

Additional attachments (optional):		Pit Closure		Tank Battery Closure	<input checked="" type="checkbox"/>	Flowline Closure		Partially Buried Vault Closure	
Site Name & COGCC Facility Number: Nordman Trust #32-20, 209597		Date: October 26, 2022				Remediation Project #: 24406			
Associated Wells: 05-039-06502		Age of Site: Spud Date- 1/15/1985				Number of Photos Attached: 4			
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) Lat/Long: (39.515431/-104.576882)							Estimated Facility Size (acres):		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Surface staining and concrete staining observed. Pump house remains on site									
USCS Soil Type: SC					Estimated Depth to Groundwater: Not Encountered. Estimated- 200' bgs				
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) staining and odor observed. extending to an unknown depth									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None observed									
Wellhead(s)									
Well API	05-039-06502								
Age	Spud 1985								
Condition of surface around wellhead	excavated prior to arrival								
PID Readings	NM								
Condition of subsurface (staining present)	Staining observed								
PID Readings	849.7 highest								
Sample taken? Location/Sample ID#	yes/y210672-01 to -02								
Photo Number(s)	WH1- WH4								
Other observations regarding wellheads: Pump jack remains, surface staining and contamination observed									
Summary									
Was impacted soil identified? No                      Yes - less than 10 cubic yards <input checked="" type="checkbox"/> Yes - more than 10 cubic yards									
Total number of samples field screened: 5					Total number of samples collected: 2				
Highest PID Reading: 849.7ppm					Total number of samples submitted to lab for analysis: 2				
If more than 10 cubic yards of impacted soil were observed:									
Vertical extent: Unknown					Estimated spill volume: historical, unknown				
Lateral extent: unknown					Volume of soil removed: left in place				
Is additional investigation required? yes									
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No                      Yes - not impacted or in contact with impacted soils    Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater: NA					Was remedial groundwater removal conducted?    Yes <input checked="" type="checkbox"/> No				
Date Groundwater was encountered: NA					Commencement date of removal: NA				
Sheen on groundwater?                      Yes <input checked="" type="checkbox"/> No					Volume of groundwater removed prior to sampling: NA				
Free product observed?                      Yes <input checked="" type="checkbox"/> No					Volume of groundwater removed post sampling: NA				
Total number of samples collected: 0					Total Volume of groundwater removed: NA				
Total number of samples submitted to lab for analysis: 0									

**TABLE 1**  
**SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA**  
**COLORADO OIL AND GAS CONSERVATION COMMISSION (OWP)**  
**NORDMAN TRUST #32-20 (OWP), ELBERT COUNTY, COLORADO**  
**FREMONT PROJECT NO. C022-104**

Sample ID	Sample Date	Depth (ft)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylenes (mg/kg)	1,2,4-Trimethyl-Benzene (mg/kg)	1,3,5-Trimethyl-Benzene (mg/kg)	Naphthalene (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500		
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500		
WHN-4	10/26/2022	4	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<b>0.029</b>	0.533	<25.0	<100
WHF-8	10/26/2022	8	<b>0.0175</b>	0.232	<b>3.53</b>	<b>27.6</b>	<b>45.7</b>	<b>8.27</b>	<b>5.97</b>	<b>3300</b>	<b>5540</b>	<b>1970</b>
FLS1-5	11/3/2022	5	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00145	<0.200	<25.0	<100
FLN1-4.5	11/4/2022	4.5	<0.0500	0.115	<b>0.972</b>	<b>22.0</b>	<b>22.0</b>	<b>7.05</b>	<b>1.86</b>	<b>2680</b>	<b>2220</b>	<b>1810</b>

Bold faced values exceed the COGCC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

\* Summation of GRO+DRO+ORO must be less than 500 mg/kg

TABLE 2  
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA  
COLORADO OIL AND GAS CONSERVATION COMMISSION (OWP)  
NORDMAN TRUST #32-20 (OWP), ELBERT COUNTY, COLORADO  
FREMONT PROJECT NO. C022-104

Sample ID	Sample Date	Depth (ft)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo (a) Anthracene (mg/kg)	Benzo (a) Pyrene (mg/kg)	Benzo (b) Fluoranthene (mg/kg)	Benzo (k) Fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo (a,h) Anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3-cd) Pyrene (mg/kg)	Pyrene (mg/kg)	1-Methyl - Naphthalene (mg/kg)	2-Methyl- Naphthalene (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
WHN-4	10/26/2022	4	0.00322	0.000774	0.00103	<0.000468	0.00059	<0.000437	0.00565	<0.000614	0.000675	0.0201	<0.000627	0.00331	<b>0.0824</b>	<b>0.0834</b>
WHF-8	10/26/2022	8	0.28	0.0622	<b>0.102</b>	0.0295	0.0339	0.0267	0.399	<0.0307	0.0482	<b>1.61</b>	<0.0314	0.266	<b>10.2</b>	<b>9.14</b>
FLS1-5	11/3/2022	5	<0.000304	<0.000334	<0.00493	<0.000468	<0.000585	<0.000437	<0.000624	<0.000614	0.000764	<0.000286	<0.000627	0.00131	<0.00109	<0.00194
FLN1-4.5	11/4/2022	4.5	0.101	0.0143	<b>0.0292</b>	0.0065	0.0116	<0.00347	0.141	0.00802	0.021	<b>0.587</b>	<0.00627	0.0724	<b>3.53</b>	<b>4.63</b>

Bold faced values exceed the COGCC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

**TABLE 3**  
**SUMMARY OF SOIL SUITABILITY FOR RECLAMATION**  
**COLORADO OIL AND GAS CONSERVATION COMMISSION (OWP)**  
**NORDMAN TRUST #32-20 (OWP), ELBERT COUNTY, COLORADO**  
**FREMONT PROJECT NO. C022-104**

Sample ID	Sample Date	Depth (ft)	pH	EC (mmhos/cm)	SAR	Boron (mg/L)
COGCC Table 915-1 Soil Suitability Limits			6 - 8.3	<4	<6	2
Site Specific Background Concentration/Value						
WHN-4	10/26/2022	4	<b>8.38</b>	0.628	2.70	0.164
BKG-0.5	11/3/2022	0.5	<b>8.32</b>	0.684	NA	<1.02

Bold faced values exceed the COGCC Table 915-1 concentrations

Yellow highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

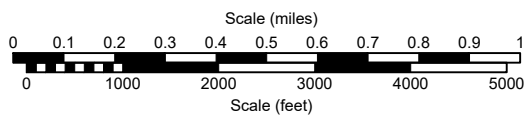
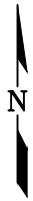
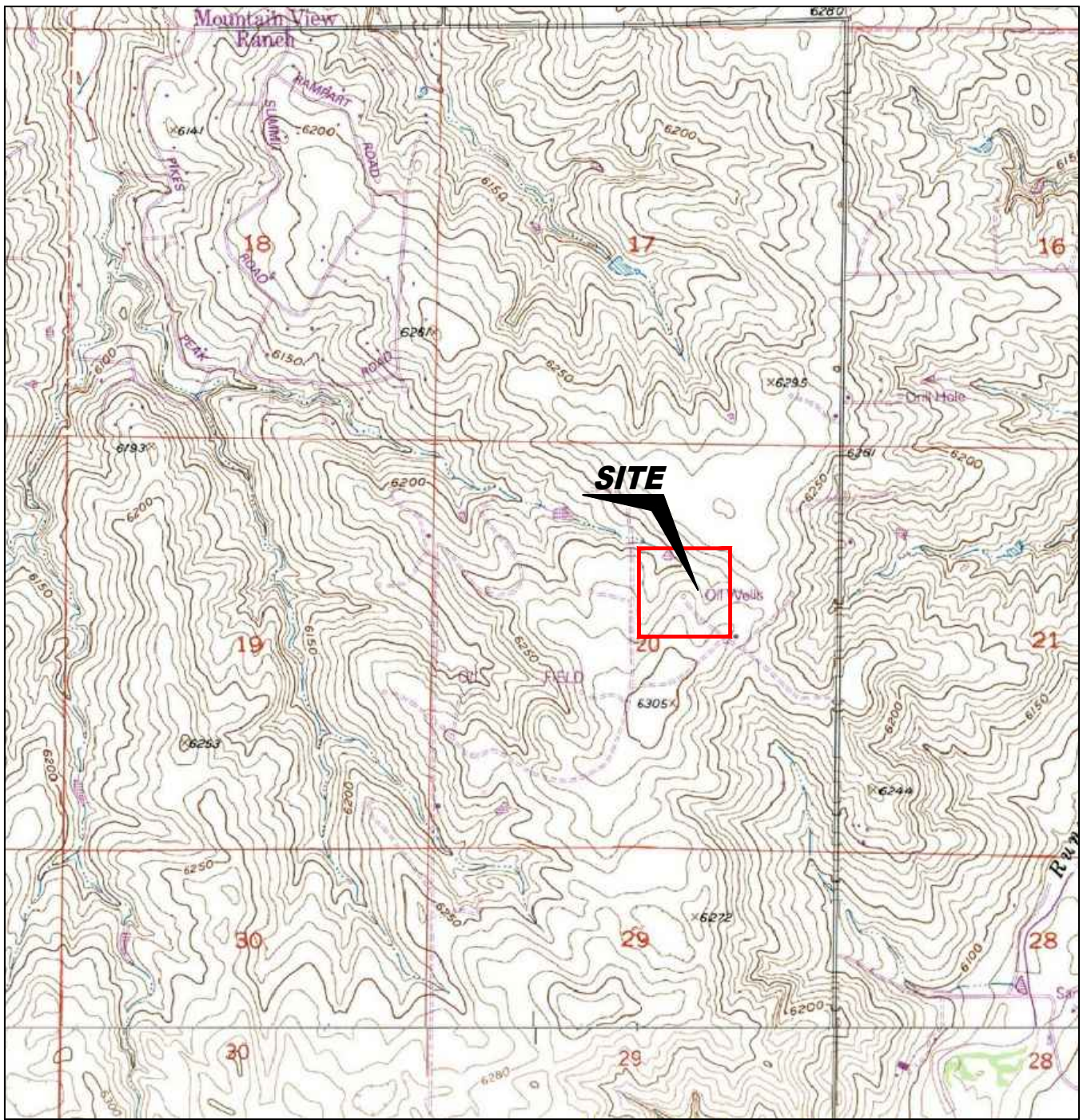
**TABLE 4**  
**SUMMARY OF METALS IN SOIL CHEMISTRY DATA**  
**COLORADO OIL AND GAS CONSERVATION COMMISSION (OWP)**  
**NORDMAN TRUST #32-20 (OWP), ELBERT COUNTY, COLORADO**  
**FREMONT PROJECT NO. C022-104**

Sample ID	Sample Date	Depth (ft)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			0.68	15000	71	0.3	3100	400	1500	390	390	23000
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
Calculated Site Specific Background Concentration												
WHN-4	10/26/2022	4	<b>4.16</b>	<b>133</b>	0.156	<0.246	13	11.7	15.4	0.143	<0.0985	<98.5
BKG-0.5	11/3/2022	0.5	<b>2.02</b>	59.4	0.119	<1.22	7.74	9.97	8.05	<b>0.58</b>	0.0317	31

Bold faced values exceed the COGCC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

NA - Not analyzed

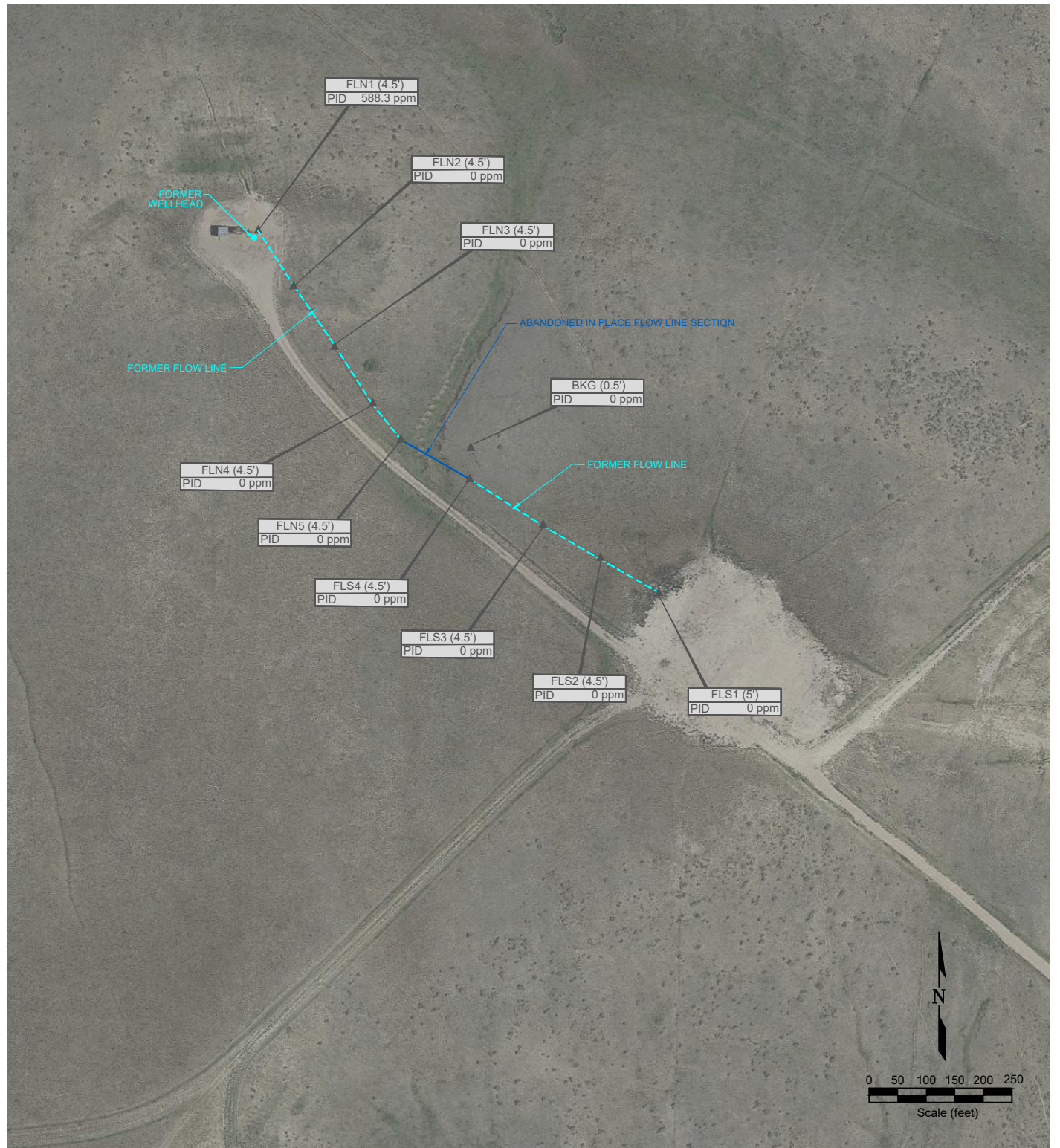


USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1  
**SITE LOCATION MAP**

**Colorado Oil And Gas Conservation Commission  
Petroshare Corporation ~ Nordman Trust (OWP) 32-20**  
SWNE Sec. 20 T6S, R64W, 6th P.M.  
Elbert County, Colorado  
39.515431°, -104.576882°

Project # <b>C022-104</b>	API # <b>05-039-06502</b>	Facility # <b>209597</b>	
Date <b>12/5/33</b>	Remediation # <b>24406</b>	Filename <b>22104TNT32-20</b>	



**LEGEND**

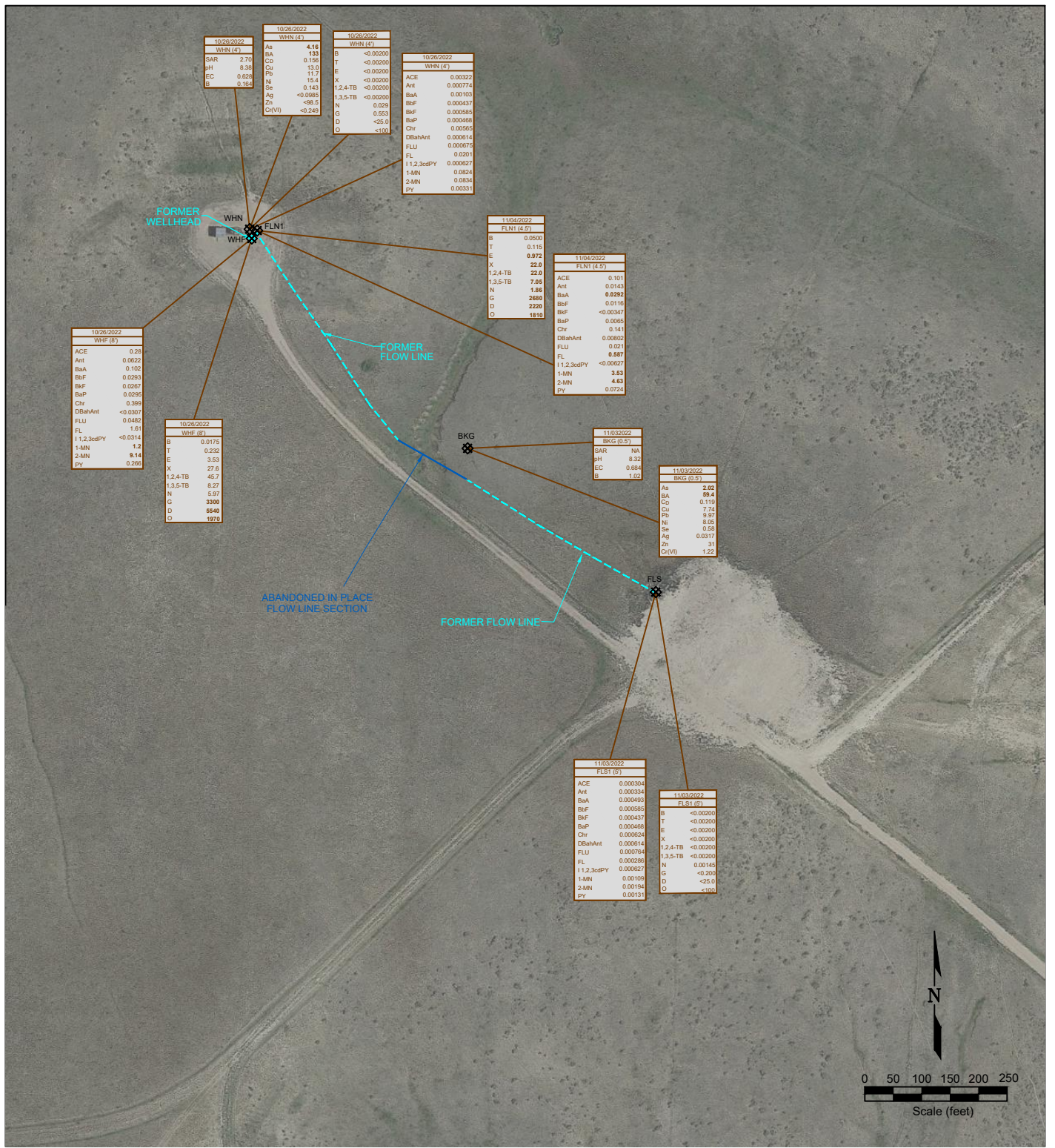
- RISER LOCATION    ▲ PID READING LOCATION    FORMER FACILITY
  - FLOW LINE    — ABANDONED IN PLACE FLOW LINE
  - FENCE LINE
- PHOTO IONIZATION DETECTION READING (ppm)  
PID = photo ionization detection / PPM = parts per million

**Figure 2  
SITE MAP**

**Colorado Oil And Gas Conservation Commission  
Petroshare Corporation ~ Nordman Trust (OWP) 32-20**  
SWNE Sec. 20, T6S, R64W, 6th P.M.  
Elbert County, Colorado  
39.515431°, -104.576882°

Project No. <b>C022-104</b>	API # <b>05-039-06502</b>	Facility # <b>209597</b>
Date <b>12/6/22</b>	Remediation # <b>24406</b>	Filename <b>22104QNT41-20</b>





DATE SAMPLED	SAMPLE ID and DEPTH (ft)	DATE SAMPLED	SAMPLE ID and DEPTH (ft)	DATE SAMPLED	SAMPLE ID and DEPTH (ft)
10/26/2022	WHN (4')	10/26/2022	WHN (4')	10/26/2022	WHN (4')
ACE	0.00322	B	<-0.00200	As	4.16
Ant	0.000774	T	<-0.00200	BA	133
BaA	0.00103	E	<-0.00200	Ca	0.158
BbF	0.000437	X	<-0.00200	Cd	13.0
BaP	0.000468	1,2,4-TB	<-0.00200	Pb	11.7
Chr	0.000666	1,3,5-TB	<-0.00200	Ni	15.4
DBahAnt	0.000614	N	0.029	Se	0.143
FLU	0.000076	G	0.553	Ag	<-0.0985
FL	0.0201	D	<-25.0	Zn	<-98.5
1,1,2,3cdPY	0.000627	O	<-100	Cr(VI)	<-0.249
1-MN	0.0634				
2-MN	0.00331				
PY					

**Figure 3**  
**SOIL CHEMISTRY MAP**  
**Colorado Oil And Gas Conservation Commission**  
**Petroshare Corporation ~ Nordman Trust (OWP) 32-20**  
**SWNE Sec. 20, T6S, R64W, 6th P.M.**  
**Elbert County, Colorado**  
**39.515431°, -104.576882°**

Project No. <b>C022-104</b>	API # <b>05-039-06502</b>	Facility # <b>209597</b>
Date <b>12/7/22</b>	Remediation # <b>24406</b>	Filename <b>22104QNT41-20</b>

**REMONT ENVIRONMENTAL**

WH1) Nordman 32-20 Pump Jack – remains on site – Facing north



WH2) Wellhead floor sample location (WHF-8)- Facing south



COGCC (OWP) – Petroshare 16 – Nordman Trust #32-20 (OWP) - API - 05-039-06502  
Wellhead Cut & Cap Photo Documentation – Fremont project Number – C022-104

WH3) Wellhead excavation – North wall sample location (WHN-4)- facing north



WH4) Nordman Trust 32 -20 Wellhead



COGCC (OWP) – Petroshare 16 – Nordman Trust #32-20 (OWP) - API - 05-039-06502  
Flowline Removal Photo Documentation – Fremont project Number – C022-104

FL1) Removed Flowline sections- fair condition minor surface rust, no signs of penetration –  
facing west



FL2) East side of abandoned (FLS4) in place section. Facing east



FL3) Western edge of abandoned (FLN5) in place section- facing east



FL4)- Flowline sample location at wellhead (FLN1) Staining and odor observed



November 11, 2022

**Fremont Environmental**

**Paul Henehan**

**8305 6th St, PO Box 1289**

**Wellington CO 80549**

**Project Name - Petroshare - Nordman Trust 32-20 Project Number - C022-104**

Attached are your analytical results for Petroshare - Nordman Trust 32-20 received by Origins Laboratory, Inc. October 26, 2022. This project is associated with Origins project number Y210672-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Fremont Environmental  
8305 6th St, PO Box 1289  
Wellington CO 80549

Paul Henehan  
Project Number: C022-104  
Project: Petroshare - Nordman Trust 32-20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WHN-4	Y210672-01	Soil	October 26, 2022 0:00	10/26/2022 17:04
WHF-8	Y210672-02	Soil	October 26, 2022 0:00	10/26/2022 17:04

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

Origins Laboratory

F-012207-01-R1  
 Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: 4210672

Client: Fremont

Client Project ID: Petroshare - Nordman Tr 32-20

Checklist Completed by: EHS/DE

Shipped Via: HD  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 10/27/22

Airbill #: NA

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 1 / 5.7 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C

Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<u>no sample time</u>
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/pH < 2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> / ( pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by: JHB (Project Manager)

10-28-22  
 Date/Time Reviewed

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**WHN-4**

**10/26/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y210672-01 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	0.164		0.100	mg/L	1	B2J2807	10/28/2022	10/31/2022	
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**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2J2811	10/28/2022	11/04/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: <i>o</i> -Terphenyl	103 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2J2730	10/27/2022	11/08/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	0.533		0.200	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	100 %		70-130			"	"	"	
Surrogate: Toluene-d8	96.1 %		70-130			"	"	"	

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**WHN-4**  
**10/26/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y210672-01 (Soil)**

**GBTEX+TMBs by 8260D**

Surrogate: 4-Bromofluorobenzene	88.0 %		70-130			B2J27 30	10/27/2022	11/08/2022	
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**Metals by Saturated Paste by EPA 6010**

Calcium	1.68		0.499	meq/L	10	[CALC]	10/28/2022	11/01/2022	
Magnesium	1.47		0.823	"	"	"	"	"	
Sodium	3.39		0.435	"	"	"	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	0.0824	0.000364	0.00067	mg/Kg	1	L646310	11/01/2022	11/02/2022	
2-Methylnaphthalene	0.0834	0.000645	0.00067	"	"	"	"	"	
Acenaphthene	0.00322	0.000304	0.00067	"	"	"	"	"	
Anthracene	0.000774	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	0.00103	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	0.00059	0.000585	0.00067	"	"	"	"	"	J
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	0.00565	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	0.000675	0.000394	0.00067	"	"	"	"	"	
Fluorene	0.0201	0.000286	0.00067	"	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"	

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 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**WHN-4**  
**10/26/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y210672-01 (Soil)**

**PAH by 8270D SIM**

Naphthalene	0.029	0.000484	0.00067	mg/Kg	1	L646310	11/01/2022	11/02/2022	
Pyrene	0.00331	0.000643	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	44.7 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	48.9 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	38.7 %		29-110			"	"	"	

**pH in Soil by 9045D**

pH	8.38			pH Units	1	B2J3109	10/31/2022	11/01/2022	
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**SAR by 20B Saturated Paste**

SAR	2.70			SAR	1	B2J2808	10/28/2022	11/01/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.628		0.00500	mmhos/cm	1	B2J3109	10/31/2022	11/01/2022	
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**Table 915 metals by EPA 6020B**

Arsenic	4.16		0.0985	mg/kg	10	B2J2817	10/28/2022	10/31/2022	
Barium	133		9.85	"	"	"	"	"	
Cadmium	0.156		0.0985	"	"	"	"	"	

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Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**WHN-4**

**10/26/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y210672-01 (Soil)**

**Table 915 metals by EPA 6020B**

Copper	13.0		9.85	mg/kg	10	B2J2817	10/28/2022	10/31/2022	
Lead	11.7		9.85	"	"	"	"	"	
Nickel	15.4		9.85	"	"	"	"	"	
Selenium	0.143		0.0985	"	"	"	"	"	
Silver	ND		0.0985	"	"	"	"	"	
Zinc	ND		98.5	"	"	"	"	"	

**Total Metals by 7196A**

Chromium, Hexavalent	ND	0.249	0.511	mg/Kg	1	L646873	10/26/2022	11/03/2022	
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**WHF-8**

**10/26/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y210672-02 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	5540		250	mg/kg	10	B2J2811	10/28/2022	11/03/2022	
Residual Range Organics (C28-C40)	1970		1000	"	"	"	"	"	

Surrogate: *o*-Terphenyl 480 % 50-150 " " " S-06

**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	45.7		0.500	mg/kg	250	B2J2730	10/27/2022	11/10/2022	
1,3,5-Trimethylbenzene	8.27		0.0500	"	25	"	"	11/08/2022	
Benzene	0.0175		0.00200	"	1	"	"	11/08/2022	
Ethylbenzene	3.53		0.0500	"	25	"	"	11/08/2022	
Toluene	0.232		0.00200	"	1	"	"	11/08/2022	
Xylenes, total	27.6		0.0500	"	25	"	"	11/08/2022	
Gasoline Range Hydrocarbons	3300		50.0	"	250	"	"	11/10/2022	

Surrogate: 1,2-Dichloroethane-d4 104 % 70-130 " " 11/08/2022  
 Surrogate: Toluene-d8 137 % 70-130 " " " S-04  
 Surrogate: 4-Bromofluorobenzene 103 % 70-130 " " "

**PAH by 8270D SIM**

1-Methylnaphthalene	10.2	0.0182	0.0335	mg/Kg	50	L646310	11/01/2022	11/02/2022	
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**WHF-8**  
**10/26/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y210672-02 (Soil)**

**PAH by 8270D SIM**

2-Methylnaphthalene	9.14	0.0323	0.0335	mg/Kg	50	L646310	11/01/2022	11/02/2022	
Acenaphthene	0.28	0.0152	0.0335	"	"	"	"	"	
Anthracene	0.0622	0.0167	0.0335	"	"	"	"	"	
Benzo(a)anthracene	0.102	0.0247	0.0335	"	"	"	"	"	
Benzo(a)pyrene	0.0295	0.0234	0.0335	"	"	"	"	"	J
Benzo(b)fluoranthene	0.0339	0.0293	0.0335	"	"	"	"	"	
Benzo(k)fluoranthene	0.0267	0.0219	0.0335	"	"	"	"	"	J
Chrysene	0.399	0.0312	0.0335	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.0307	0.0335	"	"	"	"	"	
Fluoranthene	0.0482	0.0197	0.0335	"	"	"	"	"	
Fluorene	1.61	0.0143	0.0335	"	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.0314	0.0335	"	"	"	"	"	
Naphthalene	5.97	0.0242	0.0335	"	"	"	"	"	
Pyrene	0.266	0.0322	0.0335	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	67.8 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	73.5 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	152 %		29-110			"	"	"	*

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Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2730 - EPA 5030 (soil)**

**Blank (B2J2730-BLK1)**

Prepared: 10/27/2022 Analyzed: 11/05/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.10		"	0.125	82.5		70-130			
Surrogate: Toluene-d8	0.13		"	0.125	106		70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125	107		70-130			

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 Project: Petroshare - Nordman Trust 32-20

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2730 - EPA 5030 (soil)

**LCS (B2J2730-BS1)**

Prepared: 10/27/2022 Analyzed: 11/05/2022

1,2,4-Trimethylbenzene	0.103	0.00200	mg/kg	0.100		103	70-130			
1,3,5-Trimethylbenzene	0.103	0.00200	"	0.100		103	70-130			
Benzene	0.0877	0.00200	"	0.100		87.7	70-130			
Ethylbenzene	0.106	0.00200	"	0.100		106	70-130			
Naphthalene	0.0984	0.00380	"	0.100		98.4	70-130			
Toluene	0.0983	0.00200	"	0.100		98.3	70-130			
o-Xylene	0.105	0.00200	"	0.100		105	70-130			
m,p-Xylene	0.212	0.00400	"	0.200		106	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		84.2	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		106	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.8	70-130			

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Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2730 - EPA 5030 (soil)

Matrix Spike (B2J2730-MS1)	Source: Y210655-01			Prepared: 10/27/2022 Analyzed: 11/05/2022						
1,2,4-Trimethylbenzene	0.115	0.00200	mg/kg	0.100	ND	115	70-130			
1,3,5-Trimethylbenzene	0.114	0.00200	"	0.100	ND	114	70-130			
Benzene	0.0858	0.00200	"	0.100	ND	85.8	70-130			
Ethylbenzene	0.120	0.00200	"	0.100	ND	120	70-130			
Naphthalene	0.105	0.00380	"	0.100	ND	105	70-130			
Toluene	0.0959	0.00200	"	0.100	ND	95.9	70-130			
o-Xylene	0.118	0.00200	"	0.100	ND	118	70-130			
m,p-Xylene	0.238	0.00400	"	0.200	0.000500	119	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.10		"	0.125		80.6	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		107	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		107	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2J2730 - EPA 5030 (soil)

Matrix Spike Dup (B2J2730-MSD1)	Source: Y210655-01			Prepared: 10/27/2022 Analyzed: 11/05/2022						
1,2,4-Trimethylbenzene	0.102	0.00200	mg/kg	0.100	ND	102	70-130	12.1	20	
1,3,5-Trimethylbenzene	0.100	0.00200	"	0.100	ND	100	70-130	12.9	20	
Benzene	0.0848	0.00200	"	0.100	ND	84.8	70-130	1.10	20	
Ethylbenzene	0.105	0.00200	"	0.100	ND	105	70-130	13.6	20	
Naphthalene	0.0993	0.00380	"	0.100	ND	99.3	70-130	5.75	20	
Toluene	0.0936	0.00200	"	0.100	ND	93.6	70-130	2.38	20	
o-Xylene	0.104	0.00200	"	0.100	ND	104	70-130	13.0	20	
m,p-Xylene	0.208	0.00400	"	0.200	0.000500	104	70-130	13.7	20	
Surrogate: 1,2-Dichloroethane-d4	0.11		"	0.125		85.4	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		105	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		98.9	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2J2811 - EPA 3550B</b>										
<b>Blank (B2J2811-BLK1)</b>					Prepared: 10/28/2022 Analyzed: 11/02/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	23		"	24.9		94.2	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2811 - EPA 3550B**

**LCS (B2J2811-BS1)**

Prepared: 10/28/2022 Analyzed: 11/02/2022

Diesel (C10-C28)	967	50.0	mg/kg	1000		96.7	70-130			
Residual Range Organics (C28-C40)	823	200	"	1000		82.3	70-130			
Surrogate: o-Terphenyl	47		"	49.8		95.2	50-150			

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Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2811 - EPA 3550B**

<b>Matrix Spike (B2J2811-MS1)</b>	<b>Source: Y210663-01</b>			<b>Prepared: 10/28/2022 Analyzed: 11/02/2022</b>						
Diesel (C10-C28)	965	50.0	mg/kg	1000	ND	96.5	70-130			
Residual Range Organics (C28-C40)	817	200	"	1000	ND	81.7	70-130			
Surrogate: o-Terphenyl	46		"	49.8		91.7	50-150			

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 Project: Petroshare - Nordman Trust 32-20

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2811 - EPA 3550B**

Matrix Spike Dup (B2J2811-MSD1)	Source: Y210663-01			Prepared: 10/28/2022 Analyzed: 11/02/2022						
Diesel (C10-C28)	804	50.0	mg/kg	1000	ND	80.4	70-130	18.2	35	
Residual Range Organics (C28-C40)	711	200	"	1000	ND	71.1	70-130	13.9	35	
Surrogate: o-Terphenyl	50		"	49.8		99.5	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Metals by EPA 6000/7000 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2817 - EPA 3050B**

**Blank (B2J2817-BLK1)**

Prepared: 10/28/2022 Analyzed: 10/31/2022

Arsenic	ND	0.000100	mg/kg							
Barium	ND	0.0100	"							
Cadmium	ND	0.000100	"							
Copper	ND	0.0100	"							
Lead	ND	0.0100	"							
Nickel	ND	0.0100	"							
Selenium	ND	0.000100	"							
Silver	ND	0.000100	"							
Zinc	ND	0.100	"							

**LCS (B2J2817-BS1)**

Prepared: 10/28/2022 Analyzed: 10/31/2022

Arsenic	0.0507	0.000100	mg/kg	0.0500		101	80-120			
Barium	0.0510	0.0100	"	0.0500		102	80-120			
Cadmium	0.0516	0.000100	"	0.0500		103	80-120			
Copper	0.0533	0.0100	"	0.0500		107	80-120			
Lead	0.0524	0.0100	"	0.0500		105	80-120			
Nickel	0.0538	0.0100	"	0.0500		108	80-120			
Selenium	0.0513	0.000100	"	0.0500		103	80-120			
Silver	0.0521	0.000100	"	0.0500		104	80-120			
Zinc	0.0511	0.100	"	0.0500		102	80-120			

**Matrix Spike (B2J2817-MS1)**

Source: Y210588-07

Prepared: 10/28/2022 Analyzed: 10/31/2022

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Metals by EPA 6000/7000 Series Methods - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2817 - EPA 3050B**

<b>Matrix Spike (B2J2817-MS1)</b>		<b>Source: Y210588-07</b>			Prepared: 10/28/2022 Analyzed: 10/31/2022					
Arsenic	12.4	0.0970	mg/kg	4.85	1.50	224	75-125			QM-07
Barium	11.4	9.70	"	4.85	82.9	NR	75-125			QM-07
Cadmium	15.0	0.0970	"	4.85	0.115	308	75-125			QM-07
Copper	10.4	9.70	"	4.85	7.36	63.2	75-125			QM-07
Lead	13.7	9.70	"	4.85	6.73	143	75-125			QM-07
Nickel	11.0	9.70	"	4.85	7.59	70.1	75-125			QM-07
Selenium	49.6	0.0970	"	4.85	0.0604	NR	75-125			QM-07
Silver	16.3	0.0970	"	4.85	0.0106	336	75-125			QM-07
Zinc	16.4	97.0	"	4.85	35.7	NR	75-125			QM-07

<b>Matrix Spike Dup (B2J2817-MSD1)</b>		<b>Source: Y210588-07</b>			Prepared: 10/28/2022 Analyzed: 10/31/2022					
Arsenic	6.50	0.0976	mg/kg	4.88	1.50	103	75-125	62.2	20	QR-DUP
Barium	72.9	9.76	"	4.88	82.9	NR	75-125	146	20	QM-07, QR-DUP
Cadmium	5.26	0.0976	"	4.88	0.115	105	75-125	96.4	20	QR-DUP
Copper	11.1	9.76	"	4.88	7.36	76.0	75-125	5.97	20	
Lead	12.0	9.76	"	4.88	6.73	108	75-125	13.1	20	
Nickel	12.7	9.76	"	4.88	7.59	104	75-125	14.1	20	
Selenium	5.07	0.0976	"	4.88	0.0604	103	75-125	163	20	QR-DUP
Silver	5.24	0.0976	"	4.88	0.0106	107	75-125	103	20	QR-DUP
Zinc	38.3	97.6	"	4.88	35.7	54.3	75-125	80.0	20	QM-07, QR-DUP

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2J2807 - DTPA Sorbitol Preparation**

**Blank (B2J2807-BLK1)**

Prepared: 10/28/2022 Analyzed: 10/31/2022

Boron ND 0.100 mg/L

**Duplicate (B2J2807-DUP1)**

**Source: Y210663-01**

Prepared: 10/28/2022 Analyzed: 10/31/2022

Boron 1.28 0.0987 mg/L 1.26 1.87 50

**Batch B2J2808 - Saturated Paste Metals**

**Blank (B2J2808-BLK1)**

Prepared: 10/28/2022 Analyzed: 11/01/2022

Calcium PPM ND 10.0 mg/L

SAR 0.00 SAR

Magnesium PPM ND 10.0 mg/L

Sodium PPM ND 10.0 "

**Duplicate (B2J2808-DUP1)**

**Source: Y210654-02**

Prepared: 10/28/2022 Analyzed: 11/01/2022

SAR 0.00 SAR 0.432 200 200

Calcium PPM 33.0 10.0 mg/L 30.1 9.21 50

Magnesium PPM 2.62 10.0 " 2.55 2.70 50

Sodium PPM 9.98 10.0 " 9.19 8.25 50

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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Saturated Paste - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2J3109 - NO PREP</b>										
<b>Blank (B2J3109-BLK1)</b>					Prepared: 10/31/2022 Analyzed: 11/01/2022					
Specific Conductance (EC)	ND	0.00500	mmhos/cm							
<b>Duplicate (B2J3109-DUP1)</b>					<b>Source: Y210654-02</b> Prepared: 10/31/2022 Analyzed: 11/01/2022					
Specific Conductance (EC)	0.216	0.00500	mmhos/cm		0.215			0.371	25	
pH	8.31		pH Units		8.32			0.120	25	

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 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L646310 - 3550B**

<b>MSD (L 84740-MSD-L646310)</b>	<b>Source: Y210672-01</b>			<b>Prepared: 11/01/2022 Analyzed: 11/02/2022</b>						
Naphthalene	0.0821	0.00067	mg/Kg	0.163	0.029	32.5	30-130	4.6	30	
1-Methylnaphthalene	0.0948	0.00067	"	0.163	0.0824	7.6	30-130	17.5	30	*
2-Methylnaphthalene	0.0948	0.00067	"	0.163	0.0834	6.9	30-130	14.8	30	*
Indeno(1,2,3-cd)pyrene	0.0849	0.00067	"	0.163	<0.000627	52	30-130	27.6	30	
Benzo(k)fluoranthene	0.0776	0.00067	"	0.163	<0.000437	47.6	30-130	6.9	30	
Acenaphthene	0.079	0.00067	"	0.163	0.00322	46.4	30-130	0.6	30	
Fluoranthene	0.0906	0.00067	"	0.163	0.000675	55.1	30-130	3.8	30	
Dibenz(a,h)anthracene	0.107	0.00067	"	0.163	<0.000614	65.6	30-130	18.5	30	
Anthracene	0.0832	0.00067	"	0.163	0.000774	50.5	30-130	2	30	
Chrysene	0.0889	0.00067	"	0.163	0.00565	51	30-130	7	30	
Benzo(a)anthracene	0.0869	0.00067	"	0.163	0.00103	52.6	30-130	1.9	30	
Fluorene	0.0882	0.00067	"	0.163	0.0201	41.7	30-130	4.2	30	
Benzo(a)pyrene	0.109	0.00067	"	0.163	<0.000468	66.8	30-130	4.6	30	
Pyrene	0.0925	0.00067	"	0.163	0.00331	54.7	30-130	16.1	30	
Benzo(b)fluoranthene	0.0967	0.00067	"	0.163	0.00059	58.9	30-130	18.4	30	
Surrogate: 2-Fluorobiphenyl	45.3		"	0.326	148	45.3	33-115			
Surrogate: 4-Terphenyl-d14	52.1		"	0.326	162	52.1	33-122			
Surrogate: Nitrobenzene-d5	40.7		"	0.326	128	40.7	29-110			

<b>MS (L 84740-MS-L646310)</b>	<b>Source: Y210672-01</b>			<b>Prepared: 11/01/2022 Analyzed: 11/02/2022</b>						
Fluorene	0.092	0.00067	mg/Kg	0.166	0.0201	43.3	30-130			
Naphthalene	0.086	0.00067	"	0.166	0.029	34.3	30-130			
Pyrene	0.0787	0.00067	"	0.166	0.00331	45.4	30-130			
Indeno(1,2,3-cd)pyrene	0.0643	0.00067	"	0.166	<0.000627	38.7	30-130			
Fluoranthene	0.0872	0.00067	"	0.166	0.000675	52.1	30-130			
Anthracene	0.0815	0.00067	"	0.166	0.000774	48.6	30-130			
Dibenz(a,h)anthracene	0.0888	0.00067	"	0.166	<0.000614	53.4	30-130			

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L646310 - 3550B**

MS (L 84740-MS-L646310)	Source: Y210672-01			Prepared: 11/01/2022 Analyzed: 11/02/2022						
1-Methylnaphthalene	0.113	0.00067	mg/Kg	0.166	0.0824	18.4	30-130			*
2-Methylnaphthalene	0.11	0.00067	"	0.166	0.0834	16	30-130			*
Acenaphthene	0.0785	0.00067	"	0.166	0.00322	45.3	30-130			
Benzo(a)anthracene	0.0852	0.00067	"	0.166	0.00103	50.7	30-130			
Benzo(a)pyrene	0.104	0.00067	"	0.166	<0.000468	62.6	30-130			
Benzo(b)fluoranthene	0.0804	0.00067	"	0.166	0.00059	48	30-130			
Benzo(k)fluoranthene	0.0832	0.00067	"	0.166	<0.000437	50.1	30-130			
Chrysene	0.0954	0.00067	"	0.166	0.00565	54	30-130			
Surrogate: Nitrobenzene-d5	42.1		"	0.332	128	42.1	29-110			
Surrogate: 2-Fluorobiphenyl	42.4		"	0.332	148	42.4	33-115			
Surrogate: 4-Terphenyl-d14	38.8		"	0.332	162	38.8	33-122			

LCS (LCS-L646310)	Prepared: 11/01/2022 Analyzed: 11/02/2022									
Indeno(1,2,3-cd)pyrene	0.0676	0.00067	mg/Kg	0.167		40.4	30-130			
Benzo(k)fluoranthene	0.106	0.00067	"	0.167		63.4	30-130			
Benzo(a)pyrene	0.116	0.00067	"	0.167		69.4	30-130			
Naphthalene	0.0907	0.00067	"	0.167		54.3	30-130			
Pyrene	0.11	0.00067	"	0.167		65.8	30-130			
Fluorene	0.1	0.00067	"	0.167		59.8	30-130			
Fluoranthene	0.11	0.00067	"	0.167		65.8	30-130			
Chrysene	0.102	0.00067	"	0.167		61	30-130			
Benzo(b)fluoranthene	0.0946	0.00067	"	0.167		56.6	30-130			
Anthracene	0.101	0.00067	"	0.167		60.4	30-130			
Acenaphthene	0.0947	0.00067	"	0.167		56.7	30-130			
2-Methylnaphthalene	0.0941	0.00067	"	0.167		56.3	30-130			
1-Methylnaphthalene	0.0949	0.00067	"	0.167		56.8	30-130			
Dibenz(a,h)anthracene	0.0907	0.00067	"	0.167		54.3	30-130			

Origins Laboratory, Inc.



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 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L646310 - 3550B**

**LCS (LCS-L646310)**

Prepared: 11/01/2022 Analyzed: 11/02/2022

Benzo(a)anthracene	0.104	0.00067	mg/Kg	0.167		62.2	30-130			
Surrogate: Nitrobenzene-d5	50.7		"	0.333		50.7	29-110			
Surrogate: 4-Terphenyl-d14	67.8		"	0.333		67.8	33-122			
Surrogate: 2-Fluorobiphenyl	57.9		"	0.333		57.9	33-115			

**LRB (LRB-L646310)**

Prepared: 11/01/2022 Analyzed: 11/02/2022

Naphthalene	ND	0.00067	mg/Kg				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00067	"				-			
1-Methylnaphthalene	ND	0.00067	"				-			
Pyrene	ND	0.00067	"				-			
Surrogate: 2-Fluorobiphenyl	55.5		"	0.333		55.5	33-115			
Surrogate: Nitrobenzene-d5	45.9		"	0.333		45.9	29-110			
Surrogate: 4-Terphenyl-d14	47.4		"	0.333		47.4	33-122			

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 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Total Metals by 7196A - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L646873 -</b>										
<b>DUP (L 84740-DUP)</b>		<b>Source: Y210672-01</b>			Prepared: Analyzed: 11/03/2022					
Chromium, Hexavalent	ND	0.5	mg/Kg		<0.500		-	0	20	
<b>MS (L 84740-MS)</b>		<b>Source: Y210672-01</b>			Prepared: Analyzed: 11/03/2022					
Chromium, Hexavalent	31.8	2.58	mg/Kg	41.2	< 0.249	77	75-125			
<b>MSD (L 84740-MSD)</b>		<b>Source: Y210672-01</b>			Prepared: Analyzed: 11/03/2022					
Chromium, Hexavalent	527	51.1	mg/Kg	619	<24.9	85	75-125			
<b>LCS (LCS)</b>					Prepared: Analyzed: 11/03/2022					
Chromium, Hexavalent	6.99	0.5	mg/Kg	8		87	75-125			
<b>LRB (LRB)</b>					Prepared: Analyzed: 11/03/2022					
Chromium, Hexavalent	ND	0.5	mg/Kg				-			

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Fremont Environmental  
8305 6th St, PO Box 1289  
Wellington CO 80549

Paul Henehan  
Project Number: C022-104  
Project: Petroshare - Nordman Trust 32-20

### Notes and Definitions

- U Sample is Non-Detect.
- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- QR-DUP RPD exceeds QC acceptance criteria, this indicates source sample is not homogenous.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- J Estimated Value. Analyte below reported quantitation limit.
- \* QC Failure
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



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November 22, 2022

**Fremont Environmental**

**Paul Henehan**

**8305 6th St, PO Box 1289**

**Wellington CO 80549**

**Project Name - Petroshare - Nordman Trust**

**Project Number - C022-104**

Attached are your analytical results for Petroshare - Nordman Trust received by Origins Laboratory, Inc. November 03, 2022. This project is associated with Origins project number Y211148-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Fremont Environmental  
8305 6th St, PO Box 1289  
Wellington CO 80549

Paul Henehan  
Project Number: C022-104  
Project: Petroshare - Nordman Trust

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BKG-0.5	Y211148-01	Soil	November 3, 2022 0:00	11/03/2022 16:55
FLS1-5	Y211148-02	Soil	November 3, 2022 0:00	11/03/2022 16:55

We did not receive enough volume for sample BKG-0.5 to report the SAR. JEP

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

Origins Laboratory F-012207-01-R1  
Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: 4211148 Client: Fremont  
 Client Project ID: Petroshare Nordman Trust  
 Checklist Completed by: TJH Shipped Via: TJH  
 Date/time completed: 11/04/12 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: 119  
 Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_  
 Cooler Number/Temperature: 1 15.8 °c / \_\_\_\_\_ °c / \_\_\_\_\_ °c (Describe) \_\_\_\_\_ °c  
 Thermometer ID: T004F

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		no sample times
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH < 2 for samples preserved with HNO <sub>3</sub> ; HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by: JPH (Project Manager) Date/Time Reviewed: 11-8-12

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**BKG-0.5**

**11/3/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y211148-01 (Soil)**

**Boron (DTPA Sorbitol)**

Boron	ND		1.02	mg/L	10	B2K0806	11/08/2022	11/09/2022	
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**pH in Soil by 9045D**

pH	8.32			pH Units	1	B2K0708	11/07/2022	11/07/2022	
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**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	0.684		0.00500	mmhos/cm	"	"	"	"	
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**Total Metals by 6020B**

Arsenic	2.02	0.0855	0.25	mg/Kg	5	L649197	11/16/2022	11/21/2022	
Barium	59.4	0.042	0.25	"	"	"	"	"	
Cadmium	0.119	0.0259	0.25	"	"	"	"	"	J
Copper	7.74	0.0806	0.25	"	"	"	"	"	
Lead	9.97	0.031	0.25	"	"	"	"	"	
Nickel	8.05	0.0633	0.25	"	"	"	"	"	
Selenium	0.58	0.103	0.25	"	"	"	"	"	
Silver	0.0317	0.0067	0.25	"	"	"	"	"	J
Zinc	31	0.534	2.5	"	"	"	"	"	

**Total Metals by 7196A**

Chromium, Hexavalent	ND	1.22	2.51	mg/Kg	5	L648087	11/03/2022	11/10/2022	
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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**FLS1-5**

**11/3/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y211148-02 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND		25.0	mg/kg	1	B2K0703	11/07/2022	11/07/2022	U
Residual Range Organics (C28-C40)	ND		100	"	"	"	"	"	U

Surrogate: <i>o</i> -Terphenyl	93.4 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	ND		0.00200	mg/kg	1	B2K0924	11/09/2022	11/10/2022	U
1,3,5-Trimethylbenzene	ND		0.00200	"	"	"	"	"	U
Benzene	ND		0.00200	"	"	"	"	"	U
Ethylbenzene	ND		0.00200	"	"	"	"	"	U
Toluene	ND		0.00200	"	"	"	"	"	U
Xylenes, total	ND		0.00200	"	"	"	"	"	U
Gasoline Range Hydrocarbons	ND		0.200	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4	102 %		70-130			"	"	"	
Surrogate: Toluene-d8	98.9 %		70-130			"	"	"	
Surrogate: 4-Bromofluorobenzene	86.3 %		70-130			"	"	"	

**PAH by 8270D SIM**

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Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**FLS1-5**

**11/3/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y211148-02 (Soil)**

**PAH by 8270D SIM**

1-Methylnaphthalene	ND	0.00109	0.00201	mg/Kg	1	L647814	11/09/2022	11/09/2022	
2-Methylnaphthalene	ND	0.00194	0.00201	"	"	"	"	"	
Acenaphthene	ND	0.000304	0.00067	"	"	"	"	"	
Anthracene	ND	0.000334	0.00067	"	"	"	"	"	
Benzo(a)anthracene	ND	0.000493	0.00067	"	"	"	"	"	
Benzo(a)pyrene	ND	0.000468	0.00067	"	"	"	"	"	
Benzo(b)fluoranthene	ND	0.000585	0.00067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.000437	0.00067	"	"	"	"	"	
Chrysene	ND	0.000624	0.00067	"	"	"	"	"	
Dibenz(a,h)anthracene	ND	0.000614	0.00067	"	"	"	"	"	
Fluoranthene	<b>0.000764</b>	<b>0.000394</b>	0.00067	"	"	"	"	"	
Fluorene	ND	0.000286	0.00067	"	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.000627	0.00067	"	"	"	"	"	
Naphthalene	ND	0.00145	0.00201	"	"	"	"	"	
Pyrene	<b>0.00131</b>	<b>0.000643</b>	0.00067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	37.8 %		33-115		"	"	"	
Surrogate: 4-Terphenyl-d14	48.3 %		33-122		"	"	"	
Surrogate: Nitrobenzene-d5	41.4 %		29-110		"	"	"	

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 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2K0703 - EPA 3580</b>										
<b>Blank (B2K0703-BLK1)</b>										
					Prepared: 11/07/2022 Analyzed: 11/07/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	24		"	24.9		97.8	50-150			

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Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0703 - EPA 3580**

**LCS (B2K0703-BS1)**

Prepared: 11/07/2022 Analyzed: 11/07/2022

Diesel (C10-C28)	968	50.0	mg/kg	1000		96.8	70-130			
Residual Range Organics (C28-C40)	957	200	"	1000		95.7	70-130			
Surrogate: o-Terphenyl	48		"	49.8		97.0	50-150			

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 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0703 - EPA 3580**

<b>Matrix Spike (B2K0703-MS1)</b>	<b>Source: Y211142-01</b>			Prepared: 11/07/2022 Analyzed: 11/07/2022						
Diesel (C10-C28)	967	50.0	mg/kg	1000	ND	96.7	70-130			
Residual Range Organics (C28-C40)	940	200	"	1000	ND	94.0	70-130			
Surrogate: o-Terphenyl	46		"	49.8		92.4	50-150			

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 Project: Petroshare - Nordman Trust

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0703 - EPA 3580**

<b>Matrix Spike Dup (B2K0703-MSD1)</b>	<b>Source: Y211142-01</b>		<b>Prepared: 11/07/2022 Analyzed: 11/07/2022</b>							
Diesel (C10-C28)	984	50.0	mg/kg	1000	ND	98.4	70-130	1.75	35	
Residual Range Organics (C28-C40)	982	200	"	1000	ND	98.2	70-130	4.29	35	
Surrogate: o-Terphenyl	47		"	49.8		94.7	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0924 - EPA 5030 (soil)**

**Blank (B2K0924-BLK1)**

Prepared: 11/09/2022 Analyzed: 11/10/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125	99.3		70-130			
Surrogate: Toluene-d8	0.13		"	0.125	102		70-130			
Surrogate: 4-Bromofluorobenzene	0.10		"	0.125	80.8		70-130			

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Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0924 - EPA 5030 (soil)**

**LCS (B2K0924-BS1)**

Prepared: 11/09/2022 Analyzed: 11/10/2022

1,2,4-Trimethylbenzene	0.107	0.00200	mg/kg	0.100		107	70-130			
1,3,5-Trimethylbenzene	0.110	0.00200	"	0.100		110	70-130			
Benzene	0.0912	0.00200	"	0.100		91.2	70-130			
Ethylbenzene	0.108	0.00200	"	0.100		108	70-130			
Naphthalene	0.110	0.00380	"	0.100		110	70-130			
Toluene	0.112	0.00200	"	0.100		112	70-130			
o-Xylene	0.104	0.00200	"	0.100		104	70-130			
m,p-Xylene	0.222	0.00400	"	0.200		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		97.7	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.1	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		96.4	70-130			

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 Project: Petroshare - Nordman Trust

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2K0924 - EPA 5030 (soil)

Matrix Spike (B2K0924-MS1)	Source: Y211122-01			Prepared: 11/09/2022 Analyzed: 11/10/2022						
1,2,4-Trimethylbenzene	0.126	0.00200	mg/kg	0.100	ND	126	70-130			
1,3,5-Trimethylbenzene	0.126	0.00200	"	0.100	ND	126	70-130			
Benzene	0.118	0.00200	"	0.100	ND	118	70-130			
Ethylbenzene	0.132	0.00200	"	0.100	ND	132	70-130			QM-07
Naphthalene	0.128	0.00380	"	0.100	ND	128	70-130			
Toluene	0.137	0.00200	"	0.100	ND	137	70-130			QM-07
o-Xylene	0.126	0.00200	"	0.100	ND	126	70-130			
m,p-Xylene	0.270	0.00400	"	0.200	ND	135	70-130			QM-07
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		95.5	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		94.5	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		93.0	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2K0924 - EPA 5030 (soil)

Matrix Spike Dup (B2K0924-MSD1)	Source: Y211122-01			Prepared: 11/09/2022 Analyzed: 11/10/2022						
1,2,4-Trimethylbenzene	0.117	0.00200	mg/kg	0.100	ND	117	70-130	7.33	20	
1,3,5-Trimethylbenzene	0.120	0.00200	"	0.100	ND	120	70-130	4.90	20	
Benzene	0.102	0.00200	"	0.100	ND	102	70-130	14.8	20	
Ethylbenzene	0.122	0.00200	"	0.100	ND	122	70-130	8.37	20	
Naphthalene	0.123	0.00380	"	0.100	ND	123	70-130	3.99	20	
Toluene	0.123	0.00200	"	0.100	ND	123	70-130	10.1	20	
o-Xylene	0.115	0.00200	"	0.100	ND	115	70-130	8.76	20	
m,p-Xylene	0.251	0.00400	"	0.200	ND	126	70-130	7.22	20	
Surrogate: 1,2-Dichloroethane-d4	0.12		"	0.125		96.9	70-130			
Surrogate: Toluene-d8	0.12		"	0.125		97.3	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		95.1	70-130			

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 Project: Petroshare - Nordman Trust

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0806 - DTPA Sorbitol Preparation**

**Blank (B2K0806-BLK1)**

Prepared: 11/08/2022 Analyzed: 11/09/2022

Boron ND 0.100 mg/L

**Duplicate (B2K0806-DUP1)**

**Source: Y211106-04**

Prepared: 11/08/2022 Analyzed: 11/09/2022

Boron 1.43 0.0998 mg/L 1.34 6.77 50

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**Saturated Paste - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0708 - Saturated Paste pH/EC**

**Blank (B2K0708-BLK1)**

Prepared: 11/07/2022 Analyzed: 11/07/2022

Specific Conductance (EC) ND 0.00500 mmhos/cm

**Duplicate (B2K0708-DUP1)**

**Source: Y211103-01**

Prepared: 11/07/2022 Analyzed: 11/07/2022

Specific Conductance (EC)	0.271	0.00500	mmhos/cm		0.274			1.28	25	
pH	8.05		pH Units		8.14			1.11	25	

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**Total Metals by 6020B - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L649197 - 3050B**

**LCS (LCS-L649197)**

Prepared: 11/16/2022 Analyzed: 11/21/2022

Zinc	24.5	2.5	mg/Kg	25		98	80-120			
Barium	5.05	0.25	"	5		101	80-120			
Cadmium	0.501	0.25	"	0.5		100	80-120			
Copper	2.51	0.25	"	2.5		100	80-120			
Lead	2.46	0.25	"	2.5		98	80-120			
Nickel	2.62	0.25	"	2.5		105	80-120			
Silver	0.492	0.25	"	0.5		98	80-120			
Arsenic	2.39	0.25	"	2.5		96	80-120			
Selenium	4.58	0.25	"	5		92	80-120			

**LRB (LRB-L649197)**

Prepared: 11/16/2022 Analyzed: 11/21/2022

Selenium	ND	0.25	mg/Kg				-			
Zinc	ND	2.5	"				-			
Silver	ND	0.25	"				-			
Arsenic	ND	0.25	"				-			
Nickel	ND	0.25	"				-			
Lead	ND	0.25	"				-			
Copper	ND	0.25	"				-			
Cadmium	ND	0.25	"				-			
Barium	ND	0.25	"				-			

**MSD (V 93056-MSD-L649197)**

Source: 93056

Prepared: 11/16/2022 Analyzed: 11/21/2022

Barium	39.4	0.25	mg/Kg dry	4.69	32.3	152	75-125	5.7	80	*
Cadmium	0.561	0.25	"	0.469	0.12	94	75-125	8.8	80	
Copper	20.2	0.25	"	2.34	17.6	111	75-125	6.1	80	
Lead	15.1	0.25	"	2.34	13.6	64	75-125	4.5	80	*
Selenium	3.85	0.25	"	4.69	0.508	71	75-125	0	80	*

Origins Laboratory, Inc.



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 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**Total Metals by 6020B - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L649197 - 3050B**

<b>MSD (V 93056-MSD-L649197)</b>		<b>Source: 93056</b>			Prepared: 11/16/2022 Analyzed: 11/21/2022					
Nickel	10.4	0.25	mg/Kg dry	2.34	8.05	100	75-125	9.4	80	
Silver	0.468	0.25	"	0.469	0.0222	95	75-125	1	80	
Zinc	65	2.5	"	23.4	53.6	49	75-125	7.1	80	*
Arsenic	4.49	0.25	"	2.34	2.6	81	75-125	4.5	80	
<b>MS (V 93056-MS-L649197)</b>		<b>Source: 93056</b>			Prepared: 11/16/2022 Analyzed: 11/21/2022					
Nickel	9.46	0.25	mg/Kg dry	2.45	8.05	58	75-125			*
Arsenic	4.29	0.25	"	2.45	2.6	69	75-125			*
Selenium	3.85	0.25	"	4.9	0.508	68	75-125			*
Lead	15.8	0.25	"	2.45	13.6	90	75-125			
Copper	19	0.25	"	2.45	17.6	57	75-125			*
Cadmium	0.613	0.25	"	0.49	0.12	101	75-125			
Barium	37.2	0.25	"	4.9	32.3	100	75-125			
Silver	0.473	0.25	"	0.49	0.0222	92	75-125			
Zinc	69.8	2.5	"	24.5	53.6	66	75-125			*

Origins Laboratory, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L647814 - 3550B**

<b>MSD (L 88081-MSD-L647814)</b>		<b>Source: 88081</b>			Prepared: 11/09/2022 Analyzed: 11/09/2022					
Pyrene	0.104	0.00067	mg/Kg	0.162	<0.000643	64.1	30-130	6.5	30	
Chrysene	0.0999	0.00067	"	0.162	<0.000624	61.6	30-130	1	30	
Naphthalene	0.0819	0.00201	"	0.162	<0.00145	50.5	30-130	5.2	30	
Indeno(1,2,3-cd)pyrene	0.0648	0.00067	"	0.162	<0.000627	40	30-130	15.6	30	
Fluorene	0.0953	0.00067	"	0.162	<0.000286	58.8	30-130	4.5	30	
Fluoranthene	0.104	0.00067	"	0.162	<0.000394	64.1	30-130	6.5	30	
Dibenz(a,h)anthracene	0.0786	0.00067	"	0.162	<0.000614	48.5	30-130	10.2	30	
Benzo(k)fluoranthene	0.0807	0.00067	"	0.162	<0.000437	49.8	30-130	16.5	30	
Benzo(b)fluoranthene	0.0889	0.00067	"	0.162	<0.000585	54.8	30-130	2	30	
Benzo(a)pyrene	0.114	0.00067	"	0.162	<0.000468	70.3	30-130	2.5	30	
Benzo(a)anthracene	0.099	0.00067	"	0.162	<0.000493	61.1	30-130	4.9	30	
Acenaphthene	0.0871	0.00067	"	0.162	<0.000304	53.7	30-130	5.3	30	
2-Methylnaphthalene	0.0858	0.00201	"	0.162	<0.00194	52.9	30-130	5.9	30	
1-Methylnaphthalene	0.0864	0.00201	"	0.162	<0.00109	53.3	30-130	5.7	30	
Anthracene	0.0967	0.00067	"	0.162	<0.000334	59.6	30-130	5.3	30	
Surrogate: 4-Terphenyl-d14	66.1		"	0.325	196	66.1	33-122			
Surrogate: Nitrobenzene-d5	47.3		"	0.325	142	47.3	29-110			
Surrogate: 2-Fluorobiphenyl	55.3		"	0.325	164	55.3	33-115			

<b>MS (L 88081-MS-L647814)</b>		<b>Source: 88081</b>			Prepared: 11/09/2022 Analyzed: 11/09/2022					
Fluoranthene	0.111	0.00067	mg/Kg	0.166	<0.000394	66.8	30-130			
Benzo(k)fluoranthene	0.0953	0.00067	"	0.166	<0.000437	57.4	30-130			
Benzo(b)fluoranthene	0.0907	0.00067	"	0.166	<0.000585	54.6	30-130			
Benzo(a)pyrene	0.117	0.00067	"	0.166	<0.000468	70.4	30-130			
Benzo(a)anthracene	0.104	0.00067	"	0.166	<0.000493	62.6	30-130			
Anthracene	0.102	0.00067	"	0.166	<0.000334	61.4	30-130			
Acenaphthene	0.0919	0.00067	"	0.166	<0.000304	55.3	30-130			

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L647814 - 3550B**

MS (L 88081-MS-L647814)	Source: 88081		Prepared: 11/09/2022 Analyzed: 11/09/2022							
Indeno(1,2,3-cd)pyrene	0.0758	0.00067	mg/Kg	0.166	<0.000627	45.6	30-130			
2-Methylnaphthalene	0.0911	0.00201	"	0.166	<0.00194	54.8	30-130			
Chrysene	0.101	0.00067	"	0.166	<0.000624	60.8	30-130			
1-Methylnaphthalene	0.0915	0.00201	"	0.166	<0.00109	55.1	30-130			
Dibenz(a,h)anthracene	0.0871	0.00067	"	0.166	<0.000614	52.4	30-130			
Fluorene	0.0997	0.00067	"	0.166	<0.000286	60	30-130			
Naphthalene	0.0863	0.00201	"	0.166	<0.00145	51.9	30-130			
Pyrene	0.111	0.00067	"	0.166	<0.000643	66.8	30-130			
Surrogate: 2-Fluorobiphenyl	58.4		"	0.332	164	58.4	33-115			
Surrogate: Nitrobenzene-d5	48.1		"	0.332	142	48.1	29-110			
Surrogate: 4-Terphenyl-d14	70.4		"	0.332	196	70.4	33-122			

LCS (LCS-L647814)	Prepared: 11/09/2022 Analyzed: 11/09/2022									
Fluorene	0.097	0.00067	mg/Kg	0.167		58	30-130			
Acenaphthene	0.0904	0.00067	"	0.167		54.1	30-130			
1-Methylnaphthalene	0.0909	0.00201	"	0.167		54.4	30-130			
Naphthalene	0.0861	0.00201	"	0.167		51.5	30-130			
Anthracene	0.102	0.00067	"	0.167		61	30-130			
Benzo(a)anthracene	0.104	0.00067	"	0.167		62.2	30-130			
Benzo(a)pyrene	0.119	0.00067	"	0.167		71.2	30-130			
Benzo(b)fluoranthene	0.0941	0.00067	"	0.167		56.3	30-130			
Benzo(k)fluoranthene	0.11	0.00067	"	0.167		65.8	30-130			
Chrysene	0.102	0.00067	"	0.167		61	30-130			
Dibenz(a,h)anthracene	0.115	0.00067	"	0.167		68.8	30-130			
Fluoranthene	0.108	0.00067	"	0.167		64.6	30-130			
Indeno(1,2,3-cd)pyrene	0.103	0.00067	"	0.167		61.6	30-130			
Pyrene	0.11	0.00067	"	0.167		65.8	30-130			

Origins Laboratory, Inc.



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 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L647814 - 3550B**

**LCS (LCS-L647814)**

Prepared: 11/09/2022 Analyzed: 11/09/2022

2-Methylnaphthalene	0.0906	0.00201	mg/Kg	0.167		54.2	30-130			
Surrogate: 2-Fluorobiphenyl	59.1		"	0.333		59.1	33-115			
Surrogate: 4-Terphenyl-d14	69.3		"	0.333		69.3	33-122			
Surrogate: Nitrobenzene-d5	51.3		"	0.333		51.3	29-110			

**LRB (LRB-L647814)**

Prepared: 11/09/2022 Analyzed: 11/09/2022

Fluoranthene	ND	0.00067	mg/Kg				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Chrysene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Pyrene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00201	"				-			
1-Methylnaphthalene	ND	0.00201	"				-			
Naphthalene	ND	0.00201	"				-			
Surrogate: 4-Terphenyl-d14	65.1		"	0.333		65.1	33-122			
Surrogate: 2-Fluorobiphenyl	52.8		"	0.333		52.8	33-115			
Surrogate: Nitrobenzene-d5	47.1		"	0.333		47.1	29-110			

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 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust

**Total Metals by 7196A - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch L648087 -</b>										
<b>DUP (L 82835-DUP)</b>		<b>Source: 82835</b>			Prepared: Analyzed: 11/10/2022					
Chromium, Hexavalent	ND	0.5	mg/Kg		<0.500		-	0	20	
<b>MS (L 82835-MS)</b>		<b>Source: 82835</b>			Prepared: Analyzed: 11/10/2022					
Chromium, Hexavalent	36.8	2.53	mg/Kg	40.4	< 0.244	91	75-125			
<b>MSD (L 82835-MSD)</b>		<b>Source: 82835</b>			Prepared: Analyzed: 11/10/2022					
Chromium, Hexavalent	545	50	mg/Kg	658	<24.4	83	75-125			
<b>LCS (LCS)</b>					Prepared: Analyzed: 11/10/2022					
Chromium, Hexavalent	6.35	0.5	mg/Kg	8		79	75-125			
<b>LRB (LRB)</b>					Prepared: Analyzed: 11/10/2022					
Chromium, Hexavalent	ND	0.5	mg/Kg				-			

Origins Laboratory, Inc.



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8305 6th St, PO Box 1289  
Wellington CO 80549

Paul Henehan  
Project Number: C022-104  
Project: Petroshare - Nordman Trust

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### Notes and Definitions

U Sample is Non-Detect.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

J Estimated Value. Analyte below reported quantitation limit.

\* QC Failure

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

Origins Laboratory, Inc.



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November 16, 2022

**Fremont Environmental**

**Paul Henehan**

**8305 6th St, PO Box 1289**

**Wellington CO 80549**

**Project Name - Petroshare - Nordman Trust 32-20 Project Number - C022-104**

Attached are your analytical results for Petroshare - Nordman Trust 32-20 received by Origins Laboratory, Inc. November 04, 2022. This project is associated with Origins project number Y211152-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



Fremont Environmental  
8305 6th St, PO Box 1289  
Wellington CO 80549

Paul Henehan  
Project Number: C022-104  
Project: Petroshare - Nordman Trust 32-20

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FLNI-4.5	Y211152-01	Soil	November 4, 2022 0:00	11/04/2022 12:50

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

Origins Laboratory F-012207-01-R1  
Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: 1121152 Client: Fremont  
 Client Project ID: Nordman Trust

Checklist Completed by: JAH Shipped Via: HP  
 Date/time completed: 11/7/12 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: NA

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Cooler Number/Temperature: 1 / 14.0 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C

Thermometer ID: T004

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" type="checkbox"/>	
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?		<input checked="" type="checkbox"/>		
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)(pH <2 for samples preserved with HNO <sub>3</sub> , HCL, H <sub>2</sub> SO <sub>4</sub> ) / (pH > 10 for samples preserved with NaAsO <sub>2</sub> +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
<i>no sample time</i>				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by JAH (Project Manager) Date/Time Reviewed 11-8-12

Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**FLNI-4.5**

**11/4/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y211152-01 (Soil)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	<b>2220</b>		25.0	mg/kg	1	B2K0703	11/07/2022	11/07/2022	
Residual Range Organics (C28-C40)	<b>1810</b>		100	"	"	"	"	"	

Surrogate: o-Terphenyl	104 %		50-150			"	"	"	
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**GBTEX+TMBs by 8260D**

1,2,4-Trimethylbenzene	<b>22.0</b>		0.500	mg/kg	250	B2K0931	11/09/2022	11/11/2022	
1,3,5-Trimethylbenzene	<b>7.05</b>		0.0500	"	25	"	"	11/12/2022	
Benzene	ND		0.0500	"	"	"	"	"	R-05, U
Ethylbenzene	<b>0.972</b>		0.0500	"	"	"	"	"	
Toluene	<b>0.115</b>		0.0500	"	"	"	"	"	
Xylenes, total	<b>22.0</b>		0.500	"	250	"	"	11/11/2022	
Gasoline Range Hydrocarbons	<b>2680</b>		50.0	"	"	"	"	"	

Surrogate: 1,2-Dichloroethane-d4	98.0 %		70-130			"	"	11/12/2022	
Surrogate: Toluene-d8	197 %		70-130			"	"	"	S-GC
Surrogate: 4-Bromofluorobenzene	103 %		70-130			"	"	"	

**PAH by 8270D SIM**

1-Methylnaphthalene	<b>3.53</b>	<b>0.0109</b>	0.0201	mg/Kg	10	L647814	11/09/2022	11/09/2022	
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Origins Laboratory, Inc.



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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**FLNI-4.5**

**11/4/2022 12:00:00AM**

Analyte	Result	Min Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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**Waypoint Analytical, LLC.**  
**Y211152-01 (Soil)**

**PAH by 8270D SIM**

2-Methylnaphthalene	4.63	0.0194	0.0201	mg/Kg	10	L647814	11/09/2022	11/09/2022	
Acenaphthene	0.101	0.00304	0.0067	"	"	"	"	"	
Anthracene	0.0143	0.00334	0.0067	"	"	"	"	"	
Benzo(a)anthracene	0.0292	0.00493	0.0067	"	"	"	"	"	
Benzo(a)pyrene	0.0065	0.00468	0.0067	"	"	"	"	"	J
Benzo(b)fluoranthene	0.0116	0.00585	0.0067	"	"	"	"	"	
Benzo(k)fluoranthene	ND	0.00437	0.0067	"	"	"	"	"	
Chrysene	0.141	0.00624	0.0067	"	"	"	"	"	
Dibenz(a,h)anthracene	0.00802	0.00614	0.0067	"	"	"	"	"	
Fluoranthene	0.021	0.00394	0.0067	"	"	"	"	"	
Fluorene	0.587	0.00286	0.0067	"	"	"	"	"	
Indeno(1,2,3-cd)pyrene	ND	0.00627	0.0067	"	"	"	"	"	
Naphthalene	1.86	0.0145	0.0201	"	"	"	"	"	
Pyrene	0.0724	0.00643	0.0067	"	"	"	"	"	

Surrogate: 2-Fluorobiphenyl	47.3 %		33-115			"	"	"	
Surrogate: 4-Terphenyl-d14	43.7 %		33-122			"	"	"	
Surrogate: Nitrobenzene-d5	77.7 %		29-110			"	"	"	

Origins Laboratory, Inc.



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 Wellington CO 80549

Paul Henehan  
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 Project: Petroshare - Nordman Trust 32-20

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2K0703 - EPA 3580</b>										
<b>Blank (B2K0703-BLK1)</b>										
					Prepared: 11/07/2022 Analyzed: 11/07/2022					
Diesel (C10-C28)	ND	25.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	24		"	24.9		97.8	50-150			

Origins Laboratory, Inc.



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 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0703 - EPA 3580**

**LCS (B2K0703-BS1)**

Prepared: 11/07/2022 Analyzed: 11/07/2022

Diesel (C10-C28)	968	50.0	mg/kg	1000		96.8	70-130			
Residual Range Organics (C28-C40)	957	200	"	1000		95.7	70-130			
Surrogate: o-Terphenyl	48		"	49.8		97.0	50-150			

Origins Laboratory, Inc.



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 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0703 - EPA 3580**

<b>Matrix Spike (B2K0703-MS1)</b>	<b>Source: Y211142-01</b>			Prepared: 11/07/2022 Analyzed: 11/07/2022						
Diesel (C10-C28)	967	50.0	mg/kg	1000	ND	96.7	70-130			
Residual Range Organics (C28-C40)	940	200	"	1000	ND	94.0	70-130			
Surrogate: o-Terphenyl	46		"	49.8		92.4	50-150			

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Fremont Environmental  
 8305 6th St, PO Box 1289  
 Wellington CO 80549

Paul Henehan  
 Project Number: C022-104  
 Project: Petroshare - Nordman Trust 32-20

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0703 - EPA 3580**

<b>Matrix Spike Dup (B2K0703-MSD1)</b>	<b>Source: Y211142-01</b>			<b>Prepared: 11/07/2022 Analyzed: 11/07/2022</b>						
Diesel (C10-C28)	984	50.0	mg/kg	1000	ND	98.4	70-130	1.75	35	
Residual Range Organics (C28-C40)	982	200	"	1000	ND	98.2	70-130	4.29	35	
Surrogate: o-Terphenyl	47		"	49.8		94.7	50-150			

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**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0931 - EPA 5030 (soil)**

**Blank (B2K0931-BLK1)**

Prepared: 11/09/2022 Analyzed: 11/11/2022

1,2,4-Trimethylbenzene	ND	0.00200	mg/kg							U
1,3,5-Trimethylbenzene	ND	0.00200	"							U
Benzene	ND	0.00200	"							U
Ethylbenzene	ND	0.00200	"							U
Naphthalene	ND	0.00380	"							U
Toluene	ND	0.00200	"							U
Xylenes, total	ND	0.00200	"							U
Gasoline Range Hydrocarbons	ND	0.200	"							U
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125	105		70-130			
Surrogate: Toluene-d8	0.13		"	0.125	103		70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125	98.9		70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2K0931 - EPA 5030 (soil)**

**LCS (B2K0931-BS1)**

Prepared: 11/09/2022 Analyzed: 11/11/2022

1,2,4-Trimethylbenzene	0.102	0.00200	mg/kg	0.100		102	70-130			
1,3,5-Trimethylbenzene	0.108	0.00200	"	0.100		108	70-130			
Benzene	0.101	0.00200	"	0.100		101	70-130			
Ethylbenzene	0.112	0.00200	"	0.100		112	70-130			
Naphthalene	0.0907	0.00380	"	0.100		90.7	70-130			
Toluene	0.104	0.00200	"	0.100		104	70-130			
o-Xylene	0.106	0.00200	"	0.100		106	70-130			
m,p-Xylene	0.220	0.00400	"	0.200		110	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		102	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		104	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.2	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2K0931 - EPA 5030 (soil)

Matrix Spike (B2K0931-MS1)	Source: Y211220-01			Prepared: 11/09/2022 Analyzed: 11/11/2022						
1,2,4-Trimethylbenzene	0.0967	0.00200	mg/kg	0.100	ND	96.7	70-130			
1,3,5-Trimethylbenzene	0.0972	0.00200	"	0.100	ND	97.2	70-130			
Benzene	0.0982	0.00200	"	0.100	ND	98.2	70-130			
Ethylbenzene	0.100	0.00200	"	0.100	ND	100	70-130			
Naphthalene	0.0954	0.00380	"	0.100	ND	95.4	70-130			
Toluene	0.0983	0.00200	"	0.100	ND	98.3	70-130			
o-Xylene	0.101	0.00200	"	0.100	ND	101	70-130			
m,p-Xylene	0.200	0.00400	"	0.200	ND	99.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		103	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		101	70-130			
Surrogate: 4-Bromofluorobenzene	0.13		"	0.125		100	70-130			

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**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2K0931 - EPA 5030 (soil)

Matrix Spike Dup (B2K0931-MSD1)	Source: Y211220-01			Prepared: 11/09/2022 Analyzed: 11/11/2022						
1,2,4-Trimethylbenzene	0.0909	0.00200	mg/kg	0.100	ND	90.9	70-130	6.12	20	
1,3,5-Trimethylbenzene	0.0903	0.00200	"	0.100	ND	90.3	70-130	7.40	20	
Benzene	0.0900	0.00200	"	0.100	ND	90.0	70-130	8.65	20	
Ethylbenzene	0.0914	0.00200	"	0.100	ND	91.4	70-130	9.10	20	
Naphthalene	0.0936	0.00380	"	0.100	ND	93.6	70-130	1.91	20	
Toluene	0.0889	0.00200	"	0.100	ND	88.9	70-130	10.0	20	
o-Xylene	0.0930	0.00200	"	0.100	ND	93.0	70-130	8.01	20	
m,p-Xylene	0.183	0.00400	"	0.200	ND	91.6	70-130	8.65	20	
Surrogate: 1,2-Dichloroethane-d4	0.13		"	0.125		104	70-130			
Surrogate: Toluene-d8	0.13		"	0.125		102	70-130			
Surrogate: 4-Bromofluorobenzene	0.12		"	0.125		99.9	70-130			

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**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L647814 - 3550B**

<b>MSD (L 88081-MSD-L647814)</b>	<b>Source: 88081</b>		<b>Prepared: 11/09/2022 Analyzed: 11/09/2022</b>							
Benzo(a)pyrene	0.114	0.00067	mg/Kg	0.162	<0.000468	70.3	30-130	2.5	30	
1-Methylnaphthalene	0.0864	0.00201	"	0.162	<0.00109	53.3	30-130	5.7	30	
2-Methylnaphthalene	0.0858	0.00201	"	0.162	<0.00194	52.9	30-130	5.9	30	
Acenaphthene	0.0871	0.00067	"	0.162	<0.000304	53.7	30-130	5.3	30	
Anthracene	0.0967	0.00067	"	0.162	<0.000334	59.6	30-130	5.3	30	
Benzo(b)fluoranthene	0.0889	0.00067	"	0.162	<0.000585	54.8	30-130	2	30	
Pyrene	0.104	0.00067	"	0.162	<0.000643	64.1	30-130	6.5	30	
Naphthalene	0.0819	0.00201	"	0.162	<0.00145	50.5	30-130	5.2	30	
Indeno(1,2,3-cd)pyrene	0.0648	0.00067	"	0.162	<0.000627	40	30-130	15.6	30	
Fluorene	0.0953	0.00067	"	0.162	<0.000286	58.8	30-130	4.5	30	
Fluoranthene	0.104	0.00067	"	0.162	<0.000394	64.1	30-130	6.5	30	
Dibenz(a,h)anthracene	0.0786	0.00067	"	0.162	<0.000614	48.5	30-130	10.2	30	
Chrysene	0.0999	0.00067	"	0.162	<0.000624	61.6	30-130	1	30	
Benzo(k)fluoranthene	0.0807	0.00067	"	0.162	<0.000437	49.8	30-130	16.5	30	
Benzo(a)anthracene	0.099	0.00067	"	0.162	<0.000493	61.1	30-130	4.9	30	
Surrogate: 2-Fluorobiphenyl	55.3		"	0.325	164	55.3	33-115			
Surrogate: 4-Terphenyl-d14	66.1		"	0.325	196	66.1	33-122			
Surrogate: Nitrobenzene-d5	47.3		"	0.325	142	47.3	29-110			

<b>MS (L 88081-MS-L647814)</b>	<b>Source: 88081</b>		<b>Prepared: 11/09/2022 Analyzed: 11/09/2022</b>							
Benzo(a)pyrene	0.117	0.00067	mg/Kg	0.166	<0.000468	70.4	30-130			
Chrysene	0.101	0.00067	"	0.166	<0.000624	60.8	30-130			

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**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L647814 - 3550B**

MS (L 88081-MS-L647814)	Source: 88081		Prepared: 11/09/2022 Analyzed: 11/09/2022							
Pyrene	0.111	0.00067	mg/Kg	0.166	<0.000643	66.8	30-130			
Naphthalene	0.0863	0.00201	"	0.166	<0.00145	51.9	30-130			
Indeno(1,2,3-cd)pyrene	0.0758	0.00067	"	0.166	<0.000627	45.6	30-130			
Fluorene	0.0997	0.00067	"	0.166	<0.000286	60	30-130			
Fluoranthene	0.111	0.00067	"	0.166	<0.000394	66.8	30-130			
Dibenz(a,h)anthracene	0.0871	0.00067	"	0.166	<0.000614	52.4	30-130			
Benzo(b)fluoranthene	0.0907	0.00067	"	0.166	<0.000585	54.6	30-130			
Benzo(a)anthracene	0.104	0.00067	"	0.166	<0.000493	62.6	30-130			
Anthracene	0.102	0.00067	"	0.166	<0.000334	61.4	30-130			
Acenaphthene	0.0919	0.00067	"	0.166	<0.000304	55.3	30-130			
2-Methylnaphthalene	0.0911	0.00201	"	0.166	<0.00194	54.8	30-130			
1-Methylnaphthalene	0.0915	0.00201	"	0.166	<0.00109	55.1	30-130			
Benzo(k)fluoranthene	0.0953	0.00067	"	0.166	<0.000437	57.4	30-130			
Surrogate: Nitrobenzene-d5	48.1		"	0.332	142	48.1	29-110			
Surrogate: 2-Fluorobiphenyl	58.4		"	0.332	164	58.4	33-115			
Surrogate: 4-Terphenyl-d14	70.4		"	0.332	196	70.4	33-122			

LCS (LCS-L647814)	Prepared: 11/09/2022 Analyzed: 11/09/2022									
Dibenz(a,h)anthracene	0.115	0.00067	mg/Kg	0.167		68.8	30-130			
Fluoranthene	0.108	0.00067	"	0.167		64.6	30-130			
Fluorene	0.097	0.00067	"	0.167		58	30-130			
Indeno(1,2,3-cd)pyrene	0.103	0.00067	"	0.167		61.6	30-130			
Naphthalene	0.0861	0.00201	"	0.167		51.5	30-130			
Pyrene	0.11	0.00067	"	0.167		65.8	30-130			
Chrysene	0.102	0.00067	"	0.167		61	30-130			
1-Methylnaphthalene	0.0909	0.00201	"	0.167		54.4	30-130			
Benzo(b)fluoranthene	0.0941	0.00067	"	0.167		56.3	30-130			

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Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch L647814 - 3550B**

**LCS (LCS-L647814)**

Prepared: 11/09/2022 Analyzed: 11/09/2022

Benzo(a)pyrene	0.119	0.00067	mg/Kg	0.167		71.2	30-130			
Benzo(a)anthracene	0.104	0.00067	"	0.167		62.2	30-130			
Acenaphthene	0.0904	0.00067	"	0.167		54.1	30-130			
2-Methylnaphthalene	0.0906	0.00201	"	0.167		54.2	30-130			
Anthracene	0.102	0.00067	"	0.167		61	30-130			
Benzo(k)fluoranthene	0.11	0.00067	"	0.167		65.8	30-130			
Surrogate: 4-Terphenyl-d14	69.3		"	0.333		69.3	33-122			
Surrogate: Nitrobenzene-d5	51.3		"	0.333		51.3	29-110			
Surrogate: 2-Fluorobiphenyl	59.1		"	0.333		59.1	33-115			

**LRB (LRB-L647814)**

Prepared: 11/09/2022 Analyzed: 11/09/2022

Chrysene	ND	0.00067	mg/Kg				-			
Dibenz(a,h)anthracene	ND	0.00067	"				-			
Fluoranthene	ND	0.00067	"				-			
Fluorene	ND	0.00067	"				-			
Benzo(k)fluoranthene	ND	0.00067	"				-			
Naphthalene	ND	0.00201	"				-			
Indeno(1,2,3-cd)pyrene	ND	0.00067	"				-			
Benzo(b)fluoranthene	ND	0.00067	"				-			
Benzo(a)pyrene	ND	0.00067	"				-			
Benzo(a)anthracene	ND	0.00067	"				-			
Acenaphthene	ND	0.00067	"				-			
2-Methylnaphthalene	ND	0.00201	"				-			
1-Methylnaphthalene	ND	0.00201	"				-			
Pyrene	ND	0.00067	"				-			
Anthracene	ND	0.00067	"				-			
Surrogate: 4-Terphenyl-d14	65.1		"	0.333		65.1	33-122			

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**PAH by 8270D SIM - Quality Control**  
**Waypoint Analytical, LLC.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch L647814 - 3550B

LRB (LRB-L647814)

Prepared: 11/09/2022 Analyzed: 11/09/2022

Surrogate: Nitrobenzene-d5	47.1		mg/Kg	0.333		47.1	29-110			
Surrogate: 2-Fluorobiphenyl	52.8		"	0.333		52.8	33-115			

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### Notes and Definitions

- U Sample is Non-Detect.
- S-GC Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
- R-05 The sample was diluted due to the presence of high levels of non-target analytes resulting in elevated reporting limits.
- J Estimated Value. Analyte below reported quantitation limit.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference

All soil results are reported on a wet weight basis.

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